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OTITIS MEDIA IN CHILDHOOD. SOCIO-MEDICAL ASPECTS WITH SPECIAL REFERENCE TO DAY-CARE AND HOUSING CONDITIONS

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Abstract. In order to elucidate the influence of day-care and housing condition on the frequency of otitis media, 681 children, 3—4 years old, were investigated by taking somatic and social history, otological examination and tympanometry.

At the time of investigation 76 % of the children were cared for outside their home and one third was taken care of outside their home at the age of 3 months.

Among the children cared for outside home the history of earlier otitis media was 25 % higher than among those at home; at the same time there were statistically significant more flat tympanometric curves and adenoidectomies.

Regarding housing condition there were statistically significant more children with acute otitis media in flats than in houses, especially in newer concrete flats built after 1960, and there were significantly more adenoidectomies in those flats.

Tympanometry revealed no difference in respect to housing condition.

With a view to the elucidation of the incidence of otitis media in childhood and the relation of this problem to social factors, 681 children all 3—4 years old from the Aarhus district were studied.

METHOD

The children studied were divided into four groups as shown in Table I. Of the series of 681 children, 336 were girls and 345 boys. The clinical study consisted in the taking of a thorough somatic and social history, including information on day-care and housing conditions and an otological examination including tympanometry.

Concerning day-care condition the question asked focused on the time when the children first began to attend day-care nurseries, kindergarten or if they were cared for by a baby minder in a family day-care home. Concerning housing condition it was asked for if they lived in a flat or house, type of building material, number of rooms and construction year.

Table I. *The number of children studied divided into four groups*

	No.
Randomly selected	287
Houses	119
Poor housing conditions	133
Concrete apartments	142
Total	681

RESULTS

The frequency of children cared for outside their homes related to age is shown in Fig. 1. After 3 months one third is cared for outside home and at the age of 4 years 76 % is cared for outside home.

Of the children cared for outside home 60 % started primarily at a baby minder while 40 % primarily started in day nursery or kindergarten.

Among the children cared for outside home the history of earlier otitis media was 25 % higher than among those at home, respectively 40 % and 32 % (Fig. 2). Children who attended day-care outside home before the age

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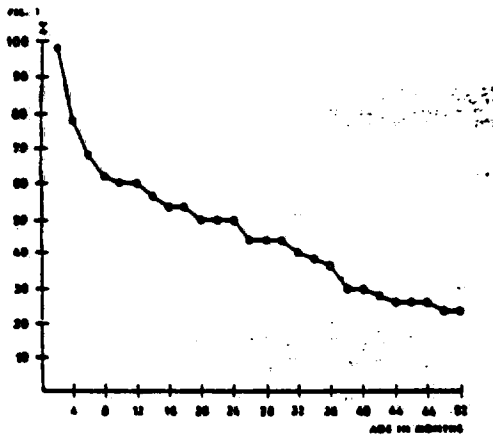

Fig. 1. Survival curve demonstrating age for first day-care outside home.

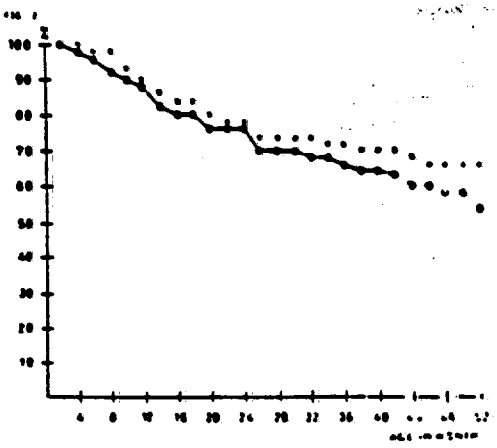

Fig. 2. Survival curve for first acute otitis media related to: day-care at home (x — x) and day-care outside home (o — o).

of 6 months had statistically significant more otitis media than children at home ($p < 0.05$). There were more boys than girls with a history of earlier otitis media and there were statistically significant ($p < 0.05$) more boys with ear discharge.

Children with earlier otitis media had an average of 2.7 attacks each and 97 % of these were treated with penicillin.

Tympanometry revealed that there were statistically significant ($p < 0.05$) more children with flat tympanometric curves (Type B) among children attending day-care than among children at home (Table II).

Table II. *Tympanometric findings (no. of ears) related to type of day-care*

	Outside home		At home	
	N	%	N	%
Normal pressure (Type A curves)	571	59	223	65
Flat curves (Type B curves)	148	15	26	8
Negative pressure (Type C curves)	252	26	93	29

Adenotomy is most commonly performed in patients with chronic infection of the nasopharynx. 14 % of the children attending day-care outside home had undergone adenotomy versus only 7 % among the home-cared children (difference statistically significant $p < 0.01$).

There was statistically significant ($p < 0.01$) sex difference in the children who underwent adenotomy since there were only 30 girls versus 55 boys.

According to housing conditions there was statistically significant more children with otitis media living in flats than in houses, and especially was there a higher otitis media frequency in flats built after 1960 (Table III). The study revealed the same tendency for adenotomy (Table IV).

The tympanometric findings showed no difference in the occurence of secretory otitis media in the four different housing conditions.

Table III. *Number of 3—4 year old children with previous otitis media classified in houses/flats built before and after 1960*

	Before 1960		After 1960	
	N	%	N	%
Houses	21/62	34	78/237	33
Flats	72/190	38	87/187	47

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Table IV. *Number of 3—4 year old children with previous adenoidectomy classified in houses/flats built before and after 1960*

	Before 1960		After 1960	
	N	%	N	%
Houses	3/59	5	16/237	7
Flats	25/189	13	42/185	23

Looking at the housing condition and type of day-care at the same time (Table V) you find — as expected — that the best constellation with respect to low incidense of otitis media is care at home and living in an older house, and the worst is day-care outside home and living in a newly built flat.

The analysis shows that the social status and the smoking habits of the parents do not have any influency on the frequency of otitis media, adenotomy or the tympanometric findings.

Table V. *Number of 3—4 year old children with previous otitis media classified in houses/flats and type of day-care*

	Houses		Flats	
	N	%	N	%
At home	23/88	26	32/84	38
Outside home	76/211	36	127/293	43

DISCUSSION

Among the factors which have influence on the frequency of otitis media we have pointed out type of day-care and housing condition.

The reason for a greater amount of morbidity for children cared for outside home is presumably a consequence of higher frequency of upper respiratory infections in day-care centers (Strangert, 1976).

The change in life style, where now more than three third of all children are cared for outside home, is probably the reason why otitis media occurs earlier in life than before (Platt, 1957).

Our statistical analysis has shown that the increased morbidity in newly built flats can not be explained from type of day-care, social status, smoking habits or sex. The four types of housing conditions are also fully comparable to the number of working hours the mother is spending outside home. It must therefore be assumed that the four groups of children are comparable and that the higher frequency of otitis media and adenotomy among children may be due to a factor inherent in newly built flats.

Of the flats built after 1960, 92 % were constructed of concrete, versus only 9 % before 1960. The higher frequency of otitis media and adenotomy in younger children might be due to a change in indoor climate caused by increased insulation and/or change of building materials — our investigation has not clarified this question (WHO-Report, 1979).

The above observations on the importance of day-care and housing conditions on morbidity are so interesting that they should encourage further research on the influence of indoor climate on health conditions — not least in children.

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